Nonventing Thermal and Humidity Control for EVA Suits, Phase II

Completed Technology Project (2011 - 2014)

Project Introduction

Future manned space exploration missions will require space suits with capabilities beyond the current state of the art. Portable Life Support Systems for these future space suits face daunting challenges, since they must maintain healthy and comfortable conditions inside the suit for long-duration missions while minimizing weight and venting no consumables. We propose to develop an innovative system for thermal and humidity control in a space suit that is simple, rugged, lightweight, and nonventing. In Phase I we proved the feasibility of our approach by identifying the optimal materials, developing fabrication methods, building and testing a proof-of-concept system, and demonstrating by test that its performance is suitable for use in space suit life support systems. Results from these tests agree well with our design models, which we used to produce a conceptual design for a full-size system. In Phase II we will optimize the overall design for integration with space suit systems, produce a full-size prototype, and demonstrate operation in a prototypical environment.

Primary U.S. Work Locations and Key Partners

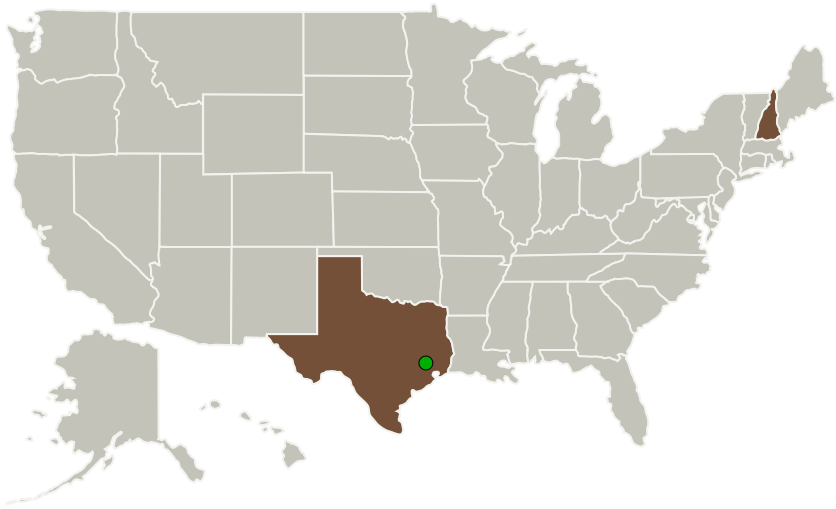

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Table of Contents

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Organizations Performing Work	Role	Type	Location
Creare LLC	Lead Organization	Industry	Hanover, New Hampshire
Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas

Primary U.S. Work Locations	
New Hampshire	Texas

Project Transitions

June 2011: Project Start

January 2014: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139176)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Creare LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Michael G Izenson

Co-Investigator:

Michael Izenson

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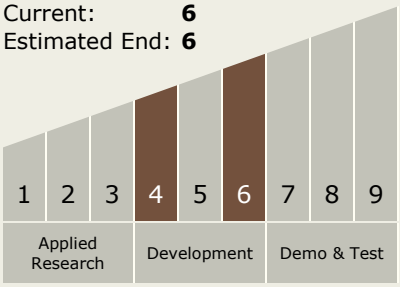
Technology Maturity (TRL)

Start: **4**
Current: **6**
Estimated End: **6**



Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.2 Extravehicular Activity Systems
    - TX06.2.2 Portable Life Support System

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System